The Renovator

US Army Corps of Engineers
Baltimore District

A Pentagon Renovation Construction Newsletter

Volume 3, Number 3 **March 1996**

The old waterproofing material is removed from the Phase II parking area on River Terrace, while historical stone is removed near the building entrance.

Old waterproofing removed in Phase II area of River Terrace

The only work that remains for the Phase I area (upper parade field) on River Terrace is placement of the new waterproofing material and backfilling of the parade field.

Several days of a relatively mild and constant temperature are needed so the new waterproofing material can be installed. Completion of the parade field area is expected in the next few weeks, barring any adverse weather.

The design for the new American Disabilities Act compliance ramps is complete and they are scheduled to be finished later this spring.

Work will continue in Phase II. Removing the waterproofing material in Phase II has proved to be a little more challenging than in the previous area, according to Corps officials.

Extra care must be taken because the stone work near the building entrance is part of the historical facade and must be removed and stored before the old waterproofing material beneath that area can be removed.

A subcontractor that specializes in stone work is performing this portion of the work. The stones will be restored to their original location.

Most of the old waterproofing material beneath the Phase II parking area has been removed. Following an inspection to ensure the structural integrity of the Phase II area, repair activities will begin.

Three Center Courtyard apexes reopen

The Renovation Office expects to complete aboveground work at apexes 5/6, 7/8 and 9/10 of the Center Courtyard Utilities Tunnel project in mid-March.

Completion of these areas means tenants will have complete access to that side of the Courtyard during the remainder of the second phase of the project.

As the doors to these apexes completely re-open, new excavation will begin in the leg between apexes 9/10 and 1/2. The new excavation will not require the entrance/exit at apex 1/2 to close at this time.

Apex 3/4 remains partially closed (the lower floor) and will not completely close until excavation between 3/4 and 1/2 begins.

While all these closures and partial closures may seem confusing, the purpose is to keep as many apexes and doors open as possible.

The doors at apex 7/8 had already re-opened, but tenants may see some temporary closures while final concrete work is completed. Inclement weather has delayed some of the concrete work, but most of the activities remain on schedule.

Environmentally friendly process 'cleans' soil

The Pentagon Renovation Office isn't trying to sweep its dirt under the rug! Instead, approximately 70,000 cubic yards of potentially petroleum contaminated soil is undergoing bioremediation, or being remediated "naturally," and recycled.

While not the first site to use the process, it is one of the first to see large-scale benefits from using naturally occurring microorganisms to clean soil.

Rather than using incineration or other thermal methods, the soil excavated from the Center Courtyard Utilities Tunnel project is undergoing bioremediation off-site.

Bioremediation is a process which uses naturally occurring microorganisms from soil to break down petroleum hydrocarbon compounds into harmless elements (carbon dioxide, water and cell mass).

Environmentally friendly

The process is considered environmentally-friendly because there are no byproducts, emissions or fuel usage involved. And unlike thermal methods, the soil's original characteristics are unchanged so it can be reused.

Bioremediation is not new, but recent refinements in the technology make it more flexible and efficient, according to RECO officials. Customarily, bioremediation is performed on-site, but for the Pentagon's Center Courtyard project, space constraints made on-site remediation impossible. RECO Industries is one of only three fixed-site bioremediation sites in the state of Virginia.

When performing fixed-site remediation, the company hauls the soil into their 165,000 square foot facility (the company cannot accept or remediate soil contaminated with hazardous waste or chemicals).

Hungry bugs

Next the soil is sprayed with a mixture of nutrients and microorganisms, or "bugs" as they are referred to by RECO. The bugs, which are the heart (or more accurately, the stomach) of the project, are found naturally in soil and feed on petroleum.

RECO then aerates and fertilizes the soil to accelerate the feeding process.

The recirculation of air through the soil not only prevents vapors from escaping into the atmosphere but also helps maintain a warm, moist environment which is optimum for the microbes to digest the petroleum products.

Once the bugs have digested all of the petroleum in the soil, they die off to natural background levels and the resulting cell mass is then digested by other naturally occurring microbes in the soil.

RECO keeps the bugs on hand by freeze-drying them, and later regenerates them by adding liquid.

Officials calculate and monitor the growth rate for the organisms, and add nutrients or reseed the soil with additional bugs as needed. With this process RECO can remediate large amounts of soil in two to three weeks.

Certificates of treatment

RECO officials point out that while the time frame for bioremediation may be longer than thermal methods, they can supply the customer with their manifest and certificate of treatment, which supplies proof of remediation to the state, in approximately the same amount of time as thermal remediation sites.

Michael Schleinkofer, environmental manager, RECO Industries, and Kevin Powell, resident engineer, Center Courtyard project, discuss bioremediation at the RECO facility.

Recycling (con't from p.2)

RECO officials commended Kevin Powell, Center Courtyard resident engineer, for supplying additional soil type information (based on his previous experience with Pentagon soil remediation) to them, because it helps speed up the process.

"I've learned that you should always try to give your contractor as much information as possible regarding the soil," said Powell. "Seemingly insignificant facts may be key to a successful remediation."

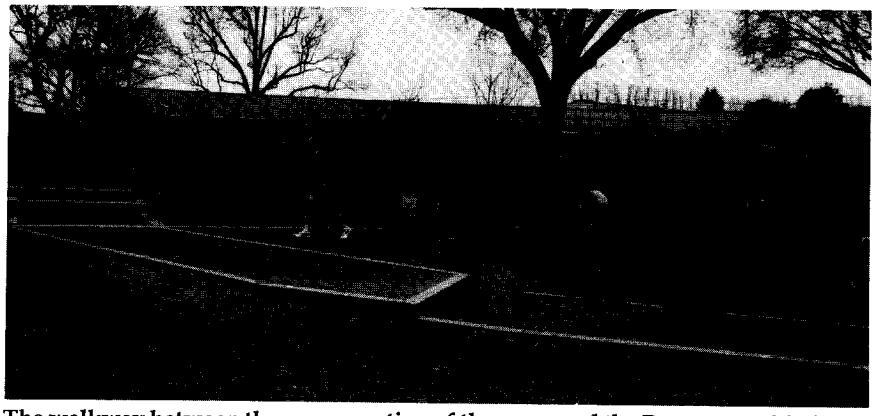
Recycling

Following remediation, the soil is tested again for petroleum compounds, halogenated compounds and hazardous metals. The soil, after clearly testing clean, can then be reused.

The bioremediated Pentagon soil is perfect for backfill because it retains its good gradation and moisture content after remediation, according to RECO officials.

Recent improvements in bioremediation also make it a price and time competitive alternative. Liability issues stemming from disposal are also resolved through the bioremediation process. "RECO assumes total liability for the Center Courtyard's soil, which makes the project much easier for us," said Powell.

According to RECO officials, the Corps' bioremediated Pentagon soil was recycled— it proved to be the perfect backfill for construction of a V-DOT highway overpass adjacent to the RECO facilities.



The walkway between the upper portion of the ramp and the Pentagon Athletic Club maintains access to Corridor 8.

Ramp gets other needed repairs

Repair work to ensure the structural integrity of the North Parking Pedestrian Ramp is now complete.

Additional maintenance repairs that were needed are now being performed under the same contract.

Currently, the contractor is repairing the lower portion of the roadway/ramp. The concrete slabs that comprise that portion have "slid," or been pushed downhill as the result of age and the shifts in the upper portion of the ramp.

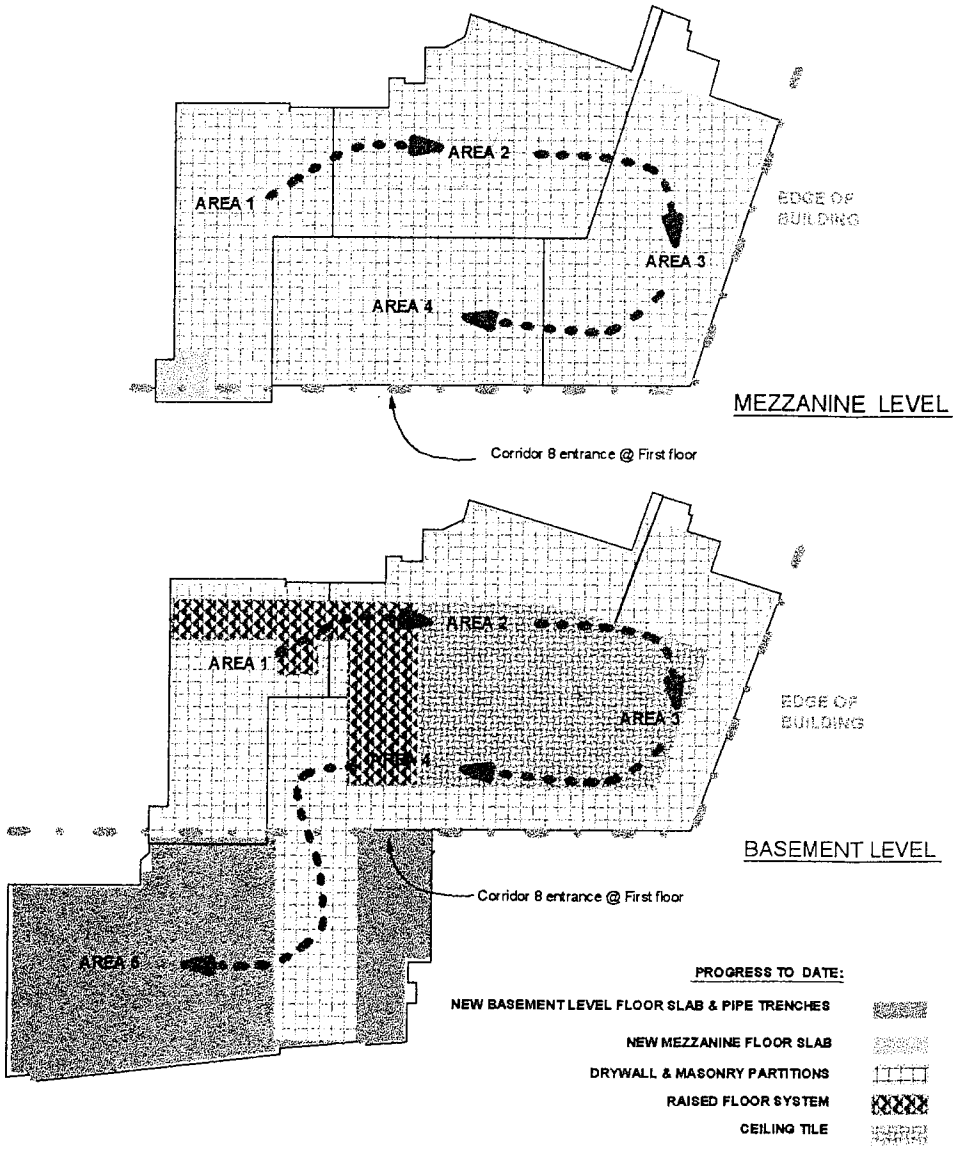
The new concrete slabs will have shear keys, or cuts, on the underside that "grab" the soil to prevent buckling of the ramp.

During the repair work on the lower portion, access to the building is maintained by the various sidewalks (located near the downstairs PAC access and directly from North Parking) that lead to the upper portion of the ramp.

Repair of the lower portion of the ramp/roadway is scheduled for completion in April 1996.

The walkway area that remained open during repairs may also need some improvements due to wear and tear caused by heavy pedestrian traffic.

Lt. Col. Chris Boruch, far left, leads a tour of the renovation project to foreign liaision officers from the Army Engineer School at Fort Leonard Wood, Mo. Countries represented include Canada, France, Australia, Great Britain and Germany.



Basement Renovation
Progress as of March 6, 1995

The monthly basement "progress to date" graphic includes the mezzanine and basement level. Work on both levels must be tracked separately because of the large areas and variations in types of construction.

The Renovator is a publication of the U.S. Army Corps of Engineers, Baltimore District, Pentagon Renovation Office. The U.S. Army Corps of Engineers is the design and construction management agent for the Pentagon Renovation Program. *The Renovator* is an unofficial publication authorized under the provisions of AR360-81. Material from this publication may be reproduced without permission. Views and opinions expressed are not necessarily those of the Department of Defense or the Department of the Army.

District Engineer.....Col. Randall R. Inouye
Deputy District Engineer.....Lt. Col. Christopher Boruch
Resident Program Manager.....John Chubb
Public Affairs Specialist & Editor.....Kim Speer

U.S. Army Corps of Engineers, Baltimore District
Pentagon Renovation Office *(located in the North Parking Lot)*
100 Boundary Channel Dr.
Arlington, Va. 22202-3712
Phone: (703) 693-8938 FAX: (703) 697-6722
E-mail: speerk@pentagon-reno.army.mil